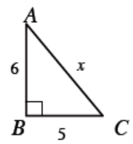
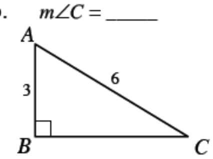
Alg. 2 Warm Up #6-2

Solve for the indicated value. Leave your answer in exact form.

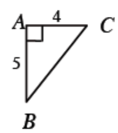
a. $x =$ _____



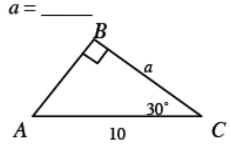
b. $m\angle C =$ _____



c. $m\angle B =$ _____



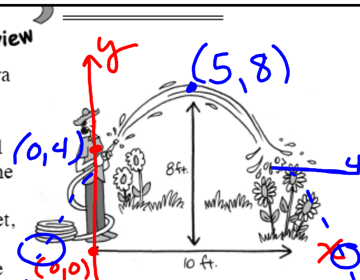
d. $a =$ _____



HW Questions:

Review & Preview

2-81. While watering her outdoor plants, Maura noticed that the water coming out of her garden hose followed a parabolic path. Thinking that she might be able to model the path of the water with an equation, she quickly took some measurements. The highest point the water reached was 8 feet, and it landed on the plants 10 feet from where she was standing. Both the nozzle of the hose and the top of the flowers were 4 feet above the ground. Help Maura write an equation that describes the path of the water from the hose to the top of her plants. What domain and range make sense for the model?



$y = a(x-h)^2 + k$

$y = a(x-5)^2 + 8$

$4 = a(0-5)^2 + 8$

$-4 = a(25)$

$a = -\frac{4}{25}$

$y = -\frac{4}{25}(x-5)^2 + 8$

domain:

$0 \leq x \leq 10$

range

$4 \leq y \leq 8$

2-82. Draw the graph of $y = 2x^2 + 3x + 1$. $\rightarrow$ $0 = (2x+1)(x+1)$

a. Find the x- and y-intercepts. $x = -\frac{1}{2}, -1$

b. Where is the line of symmetry of this parabola? Write its equation.

c. Find the coordinates of the vertex.

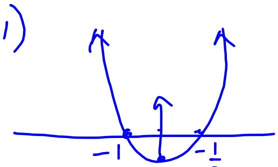
$$x = \frac{1}{2}\left(-\frac{1}{2} - 1\right) = \frac{1}{2}\left(-\frac{3}{2}\right) = -\frac{3}{4}$$

$$y = \left(\frac{2}{1} \cdot -\frac{3}{4} + 1\right)\left(-\frac{3}{4} + 1\right)$$

$$y = \left(-\frac{3}{2} + \frac{2}{2}\right)\left(-\frac{3}{4} + \frac{4}{4}\right)$$

$$y = \left(-\frac{1}{2}\right)\left(\frac{1}{4}\right)$$

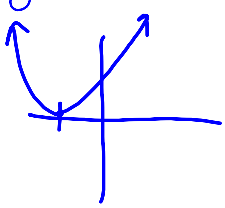
$$y = -\frac{1}{8}$$



$\left(-\frac{3}{4}, -\frac{1}{8}\right)$

2-83. Change the equation in problem 2-82 so that the parabola has only one x-intercept.

$y = (x+1)^2$



OR Move the original graph up $\frac{1}{8}$

$y = 2x^2 + 3x + 1 + \frac{1}{8}$

$y = 2x^2 + 3x + \frac{9}{8}$

2-84. Simplify each expression. Remember you can simplify radicals by removing perfect square factors (e.g. $\sqrt{12} = \sqrt{4 \cdot 3} = 2\sqrt{3}$).

a. $\sqrt{24}$ b. $\sqrt{18}$ c. $\sqrt{3} + \sqrt{3}$ d. $\sqrt{27} + \sqrt{12}$

2-85. Below are two more situations that can be described using exponential functions. They represent a small sampling of the situations where quantities grow or decay by a constant percentage over equal periods of time. For each situation:

- Find an appropriate unit of time (such as days, weeks, years).
- Find the multiplier that should be used.
- Identify the initial value.
- Write an exponential equation in the form $f(x) = ab^x$ that represents the growth or decay.

a. The value of a car with an initial purchase price of \$12,250 depreciates by 11% per year.

b. An investment of \$1000 earns 6% annual interest, compounded monthly.

2-86. Rewrite each of the following expressions so that your answer has no negative or fractional exponents.

a. $16^{5/4}$

b. $(x^5y^4)^{1/2}$

$\sqrt{x^2x^2x^1y^2y^2}$

$x \cdot x \cdot \sqrt{x} \cdot y \cdot y$

$x^2y^2\sqrt{x}$

c. $(x^2y^{-1})(x^{-3}y)^0$

$\frac{x^2}{y} \cdot 1$

$\boxed{\frac{x^2}{y}}$

Pink CP's:

Parent	General Form
$y = x^2$	$y = a(x - h)^2 + k$
$y = x^3$	$y = a(x-h)^3 + k$
$y = \sqrt{x}$	$y = a\sqrt{x-h} + k$
$y = \frac{1}{x}$	$y = a\frac{1}{x-h} + k$

Graph is a hyperbola

Today's Classwork:
Purple WS.

HW: 2 -

91 - 93, 96 - 100